

WHAT IS CLAIMED IS:

1. A method of manufacturing a laterally diffused metal oxide semiconductor (LDMOS) device, comprising:

3 forming a lightly-doped source/drain region with a first
4 dopant, the lightly-doped source/drain region located between
5 first and second isolation structures; and
6 creating a gate over the lightly-doped source/drain region.

2. The method as recited in Claim 1 wherein forming includes forming a lightly-doped source/drain region with a first N-type dopant.

3. The method as recited in Claim 2 wherein the first N-type dopant has an implant dose ranging from about $1E12$ atoms/cm² to about $1E13$ atoms/cm².

4. The method as recited in Claim 3 wherein the first N-type dopant has an implant dose of about $5E12$ atoms/cm².

5. The method as recited in Claim 1 further including diffusing a second dopant at least partially across the lightly-

3 doped source/drain region and under the gate to form a first
4 portion of a channel.

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6. The method as recited in Claim 5 wherein diffusing the
second dopant includes diffusing a ¹¹⁵second P-type dopant having an
3 implant dose ranging from about 1E13 atoms/cm² to about 1E14
4 atoms/cm².

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7. The method as recited in Claim 5 wherein diffusing the
second dopant, includes diffusing a ¹¹⁵second P-type dopant having an
implant dose about 100 times higher than an implant dose of the
first dopant.

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8. The method as recited in Claim 5 further including
12 placing a heavy concentration of the first dopant in a region
13 adjacent a source side of the gate, and in the lightly-doped
14 source/drain region adjacent a drain side of the gate.

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9. The method as recited in Claim 8 wherein placing includes
placing the heavy concentration of the first dopant in the lightly-
doped source/drain region a distance ranging from about 2000 nm to
about 3000 nm from the drain side of the gate. 2000A - 3000A

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10. The method as recited in Claim 8 wherein placing includes placing an implant dose of the first dopant ranging from about $1E15$ atoms/cm² to about $1E16$ atoms/cm².

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11. A method of manufacturing an integrated circuit,
comprising:

fabricating laterally diffused metal oxide semiconductor
(LDMOS) transistors, including:

forming a lightly-doped source/drain region with a first
dopant, the lightly-doped source/drain region located between
first and second isolation structures; and

creating a gate over the lightly-doped source/drain
region;

depositing interlevel dielectric layers over the LDMOS
transistors; and

creating interconnect structures in the interlevel dielectric
layers and interconnecting the LDMOS transistors to form an
operative-integrated circuit.

12. The method as recited in Claim 11 wherein forming
includes forming a lightly-doped source/drain region with a first
N-type dopant.

13. The method as recited in Claim 12 wherein the first N-
type dopant has an implant dose ranging from about $1E12$ atoms/cm²
to about $1E13$ atoms/cm².

14. The method as recited in Claim 13 wherein the first N-type dopant has an implant dose of about $5E12$ atoms/cm².

15. The method as recited in Claim 11 further including diffusing a second dopant at least partially across the lightly-doped source/drain region and under the gate to form a first portion of a channel.

16. The method as recited in Claim 15 wherein diffusing the second dopant includes diffusing a ^{1st} second P-type dopant having an implant dose ranging from about $1E13$ atoms/cm² to about $1E14$ atoms/cm².

17. The method as recited in Claim 15 wherein diffusing the second dopant includes diffusing a ^{1st} second P-type ^{dopant} having an implant dose about 100 times higher than an implant dose of the first dopant.

18. The method as recited in Claim 15 further including placing a heavy concentration of the first dopant in a region adjacent a source side of the gate, and in the lightly-doped source/drain region adjacent a drain side of the gate.

19. The method as recited in Claim 18 wherein placing
2 includes placing the heavy concentration of the first dopant in the
3 lightly-doped source/drain region a distance ranging from about
4 2000 nm to about 3000 nm from the drain side of the gate.

20. The method as recited in Claim 18 wherein placing
2 includes placing an implant dose of the first dopant ranging from
3 about $1E15$ atoms/cm² to about $1E16$ atoms/cm².

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